No. 13352

IN THE

United States Court of Appeals

FOR THE NINTH CIRCUIT

JULES D. GRATIOT and AIR-MAZE CORPORATION,

Appellants,

vs.

FARR COMPANY, a corporation,

Appellee.

OPENING BRIEF OF APPELLANTS.

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TOPICAL INDEX

PAGE

TABLE OF AUTHORITIES CITED.

PAGE

STATUTES

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I.

Statement of Jurisdiction.

Jurisdiction of the District Court in this action is founded upon the patent statutes of the United States [Complaint, R. 3], and this is admitted by the defendants [Answer, R. 40]. The District Court's judgment was entered on February 27, 1952 [R. 67], and appellants' notice of appeal was filed on March 4, 1952 [R. 72]. Jurisdiction of the District Court is therefore founded upon Title 28, Section 1338, of the United States Code, and jurisdiction of this Court of Appeals is founded upon Title 28, Section 1292(4), of the United States Code.

II.
Statement of the Case.

A. The Parties.

Plaintiff and appellee Farr Company (hereinafter referred to as "plaintiff") is a corporation, and is in the business of making and selling air filters and related items.

Defendant-appellant Air-Maze Corporation (hereinafter referred to as "defendant" or "Air-Maze") is a corporation, and for many years has been engaged in the manufacture of a large number of different products [R. 324-334] including air filters.

Defendant-appellant Jules D. Gratiot, an individual, is a California factory representative of Air-Maze, promoting the sale of Air-Maze products on a commission basis. He was joined as a party solely to obtain venue as to Air-Maze and, since the propriety of such venue is not an issue on this appeal, neither Mr. Gratiot nor his activities need be separately considered on this appeal.

B. The Issue.

The Complaint charges infringement of U. S. Letters Patent No. 2,286,479 [PX-1, R. 839], issued on June 16, 1942, to Morrill N. Farr, on "Air Filter Panel" (hereinafter sometimes referred to as the "'479 patent"), and subsequently assigned to plaintiff Farr Company. By a "More Definite Statement" [R. 14], plaintiff charged that claims 4, 5, 7, and 8 of said Letters Patent were infringed by defendants, and only such claims are here in issue. By such "More Definite Statement" [R. 14], plaintiff also charged that the Air-Maze Type P-5 and P-5-R type air filter panels were the alleged

infringing devices. No distinction was made in the evidence between said P-5 and P-5-R air filter panels, and only the Air-Maze P-5 need be considered on this appeal. It is exemplified by physical Exhibit PX-12.

The action was tried before the Honorable Peirson M. Hall, United States District Judge. The District Court's Opinion [R. 819], judgment [R. 67] and Conclusions of Law [R. 65] held claims 4, 5, 7, and 8 of the patent in suit valid and infringed by the Air-Maze P-5 air filter panel, and awarded an injunction against further manufacture and sale thereof by defendants. Upon the posting of a $10,000.00 bond by defendants, the injunction was stayed pending appeal [R. 73].

The only two general issues before this Court on the appeal are as follows:

> (1) Are claims 4, 5, 7, and 8 of U. S. Letters Patent No. 2,286,479 in suit valid at law?
>
> (2) Are claims 4, 5, 7, and 8 of said Letters Patent in suit infringed by the Air-Maze P-5 air filter panel?

For brevity, plaintiff's exhibits are sometimes referred to herein as "PX" and defendants' exhibits as "DX," and all emphasis is ours unless otherwise noted.

C. The Witnesses.

At the trial, plaintiff called three witnesses: *R. S. Farr,* son of the patentee of the '479 Farr patent in suit and president of the plaintiff corporation [R. 255-256]; *M. S. Farr,* a brother of R. S. Farr and an officer of the plaintiff corporation [R. 292]; and *Sydney F. Duncan,* age 47, a professor of mechanical engineering

at the University of California, who has been a technical consultant for the plaintiff since it commenced business some years ago [R. 100-102] and is currently a full-time paid employee of the plaintiff for a year's period [R. 245]. Mr. Duncan testified as a filter expert, but admitted that most of his filter experience has been with the Farr Company filters, and that he has had little experience with other types [R. 175-177]. It is thus plain that all three of plaintiff's witnesses were strongly biased in its favor. It should be added that M. N. Farr, the patentee of the '479 patent in suit, was deceased long prior to this litigation.

Four witnesses testified on behalf of defendants: *W. B. Watterson,* sales manager for defendant Air-Maze [R. 323]; *K. F. Russell,* a mechanical engineer, who has been employed by the Vortox Company of Claremont, California, for twenty-two years and is now general manager and chief engineer of that company, a competitive air filter manufacturer [R. 343], and neither he nor his company has any interest in the outcome of this litigation [R. 358]; *Frank B. Rowley,* Professor Emeritus in Mechanical Engineering at the University of Minnesota and a consulting mechanical engineer, with over forty years' research experience in the field of air conditioning and air filters, being a member of many national technical societies and being at one time president of the American Society of Heating and Ventilating Engineers, being listed in "Who's Who in America," "Who's Who in Engineering," and "American Men of Science," having for over twenty-five years done a large amount of research work to determine the fundamental properties of air filters and dust in the air, and has done a large amount of consulting work for various indus-

trial concerns on the development and testing of air filters [R. 476-479]; and *R. E. Brown,* assistant chief engineer of defendant Air-Maze [R. 684]. Mr. Watterson and Mr. Brown were, admittedly, interested witnesses, but, it is submitted, Mr. Russell and Mr. Rowley are men of the highest qualifications in the filter art and entirely unbiased.

D. The Farr '479 Patent in Suit—Generally.

The Farr '479 patent in suit [PX-1, R. 839] discloses and claims an air filter for filtering dust from air. As shown in the Farr Co. catalogue, PX-7, such filters made under the '479 patent in suit are either rectangular or round [R. 200-201], the Farr rectangular filter being exemplified by PX-2 [R. 108] and the round Farr filter being exemplified by DX-D [R. 309].

The filter material, or "media," of the '479 patent and the commercial Farr Co. filters is illustrated by physical exhibit PX-3. It consists of alternate crimped and flat sheets of wire screen (ordinary "fly" screen) assembled to form a filter element. In it the crimped screen sheets provide corrugations which are "V" shaped both in cross section and in plan view (to make a "herringbone" pattern), as best shown in Figs. 3 and 4 of the '479 patent. In it the corrugations (*i. e.,* "herringbones") in all of the crimped sheets of wire screen are parallel when looking down from the top, and this is an important point to note, as will be shown hereinafter. It is also important to note that only this single form of the alleged Farr invention is disclosed in the '479 patent in suit [R. 359]. In the Farr '479 filter, as stated by the applicant in the file-wrapper of the application therefor [R. 921, 922], the "V-shaped" cor-

rugations in the crimped sheets of fly screen co-operate with the adjoining flat screens to form open *triangular-shaped* passages that extend through the filter from front to back, which passages are bounded on all sides by wire screen.

Prior to operation, the Farr filter of the '479 patent in suit is preferably dipped in oil so as to coat the wires of the filter media, to act as an adhesive aiding in the collection of dust, and allowed to drain of excess oil. The filter is then ready to be installed for use.

Air filters of the general type of that shown in the Farr '479 patent are adapted for a variety of industrial and domestic uses. They are placed in air ducts in ordinary heating and ventilating systems of conventional domestic and industrial types [R. 278], are used in air intakes for Diesel railroad engines, for grease eliminators to remove liquid droplets of grease from air in restaurants [R. 210], for use on the air intakes of internal combustion engines and carburetors therefor [R. 278-279], and for other specialized purposes. All of such uses were old in the filter art.

In operation, dust-laden air is blown or drawn through the Farr '479 filter. When the filter media is clean of dust, the air tends to pass straight through the filter, passing directly through the screens, which causes substantial turbulence in the air flow. Particles of dust carried by the air thus tend to hit the wire of the screens and stick thereto, thus filtering the dust from the air. Such filters are termed "impingement type" filters, because they remove the dust by impinging it against solid collecting surfaces (wire, in the '479 filter) [R. 759-761]. Impingement type filters are generally old and well known in the art.

In the operation of the Farr '479 filter, dust tends to collect and adhere to the wire screen first adjacent to the inlet or upstream face and to a less degree throughout the depth of the filter element. As the mesh openings in the wire screen near the upstream face become clogged with dust, the air cannot pass therethrough but instead passes *along* the open triangular passages, formed by the V-shaped corrugations and the flat screen, until the air comes to openings in the mesh and then partially passes therethrough. Thus, the Farr filter of the '479 patent progressively fills with dust from front to back, and this is termed in the evidence as "progressive loading." Such "progressive loading" is admitted by the plaintiff and its witnesses to be old in the air filter art, as will be shown hereinafter.

In the filter of the '479 patent, as the dust load increases, the efficiency (*i. e.,* ability to remove dust from the air) decreases, and the pressure drop across the filter increases, and plaintiff's expert Duncan fixed the life of the 20" x 20" Farr filter in evidence, as the time it takes to collect a dust load of 500 to 600 grams of dust [R. 183-184]. The filter then must be cleaned of all dust, following which it can be re-oiled and put back in service.

Plaintiff asserts that filters made in accordance with the '479 patent in suit obtain a high dust-removal efficiency combined with a low increase in pressure drop across the filter as it loads with dust. This was the stated general object of the '479 patent [PX-1, Col. 1, lines 6-11, R. 840]. Much of the record is devoted to extensive inquiry into the relative operating characteristics of the '479 filter, defendants' accused P-5 filter, various other types of filters and details of testing procedure. We sug-

gest that this was a by-path away from the principal issues and profitably may be largely ignored by this Court. A brief summary of the evidence on this question, however, may be helpful.

Prior to suit, extensive *ex parte* tests were made separately by the experts for plaintiff and for defendant Air-Maze. Extensive graphs of curves were put in evidence by both sides, showing comparative efficiencies and pressure drops of the various filters tested. There are many differences in such graphs and they superficially appear to be in conflict. This is not the case, however. The evidence established that Professor Rowley, defendants' expert, in conducting his tests, reflected in defendants' curves in evidence, employed a conventional test dust ("80-20" dust) widely employed by others in testing such air filters [R. 490-491; 580-582], whereas Mr. Duncan, plaintiff's expert, used a special test dust ("Arizona road dust") which no one else employs in such testing [R. 288; 492-493]. Both experts agreed that it is difficult to compare test results made with diverse dusts [R. 574; 718-719]. Both agreed that the differences in their respective test curves resulted primarily from the fact that they had used different test dusts [R. 732-733].

At the suggestion of the District Court [R. 657-659], during the trial the parties jointly made a test of the Farr '479 filter using the standard test dust employed by Professor Rowley, and its results were plotted as an overlay "80-20" curve on DX-VV [R. 680-681]. The *only* difference in these two tests was in the dust used. It gives an entirely different picture as to both efficiency and pressure drop of the Farr '479 filter than that presented by plaintiff's curves originally embodied in PX-13 upon which the "80-20" curve was plotted in DX-VV. The

long and the short of the entire controversy as to the respective tests of the parties is that in filter testing you can obtain about the kind of a performance curve that you want by selecting a particular test dust. We suggest that plaintiff, in its tests, wished to present as pretty a picture as possible of good filtering efficiency and relatively low pressure drop as to both its '479 filter and the accused Air-Maze P-5 filter, and merely selected a test dust that would give such test results. We do not criticize plaintiff for this, but merely point out the fact.

It is uncontroverted that the plaintiff Farr's '479 filter and defendant's P-5 filter have generally similar performance characteristics in dust-removal efficiency and a relatively low rise in pressure drop when the respective filters are clean [R. 603-604]. However, as pointed out by defendant's expert Professor Rowley, the P-5 (and, by the same token, plaintiff's '479 filter) is not a remarkable filter, having only a good average dust-removal efficiency and a low pressure drop [R. 602].

In air filters of the general type here considered, a pressure drop rise up to 0.5 inch of water during their normal life is permissible for most commercial installations [R. 184-185; 339], which is higher than that of either the Farr '479 or Air-Maze P-5 in terms of plaintiff's claimed pressure drop rises, but a large part of the commercial demand is for air filters having efficiencies materially higher than either [R. 600-601] and well above 90%, which neither the Farr '479 nor the P-5 filters can attain as is conclusively shown by the evidence in this action.

As pointed out by the expert Rowley, pressure drop in such an air filter is adjustable, and if the designer wants a high efficiency, he cannot also get a low pressure drop,

the pressure drop rising with the efficiency [R. 604]. Obviously, the '479 filter is a compromise between these factors, having only a moderate efficiency and a low pressure drop.

During the prosecution of the application for the '479 patent, the plaintiff and its representatives and counsel represented to the Patent Office that the Farr '479 filter had an average filtering efficiency greatly in excess of 90% [R. 875], but such fantastic claims have been abandoned here, and, it may be presumed, such claims were made to induce the Patent Office to issue the '479 patent in suit.

Performance characteristics similar to those of the Farr '479 filter and the Air-Maze P-5 may be obtained, of course, without infringing any of the claims of the '479 patent. It is not unique in such characteristics. Thus, Air-Maze for many years made and extensively sold a filter known here as the "P-5 Obsolete" which was almost identical in structure with its accused P-5 and which plaintiff does not charge infringes the '479 patent [R. 90-91]. Mr. Farr, president of plaintiff, admitted that the "P-5 Obsolete" had the same operating characteristics as the Farr '479 filter [R. 267]. Similarly, the Vortox Company, a competitive air filter manufacturer, makes and sells air filter panels which are directly comparable in filter efficiency, pressure drop, and sales price to the Farr '479 filters and the Air-Maze P-5, but which have no wire mesh whatever in them and do not infringe the '479 patent [R. 344-355]. Furthermore, a conventional competitive filter is the "electrostatic" type, which is very efficient, can be designed for low pressure drop, and does not infringe the '479 patent [R. 217-218; 517]. As shown by Plate I, bound at the end of this brief, other prior art filters,

notably the Air-Maze Type B [PX-5], and the Detroit Air Filter, have characteristics quite similar to those of the Farr '479 filter here in suit.

Thus, while the '479 filter may be a good filter, it is not alone in its field and enjoys lots of healthy competition with non-infringing types of filter panels. Its operating characteristics, certainly, are not in any way unique.

E. The Alleged Invention of the '479 Patent in Suit.

Plaintiff's counsel very properly admitted before the District Court that all of the individual elements of the filter of the '479 patent in suit (and claims 4, 5, 7 and 8 in suit) are separately old in the prior art [R. 803]. This was also plainly admitted by plaintiff's expert Duncan in his chart, PX-32 [R. 986-986-A], purporting to distinguish the claims in suit from the prior art. Consequently, the patent in suit covers no more than an alleged combination of old elements.

The District Court's Findings of Fact, drafted by plaintiff's counsel, wholly fail to identify the alleged invention of the '479 patent in suit. They are strangely silent on this critical issue. We, like this Court, must therefore attempt to guess as to what plaintiff will contend on this appeal is the alleged invention of the patent in suit.

Plaintiff's counsel in the Court below initially conceded that the angled, or abrupt, *change of direction* of the passages through the filter is an essential element [R. 813-814], and, in fact, *was the "invention"* residing in the '479 patent in suit.

This was stated by plaintiff's counsel as follows:

> "Any fair reading of the prosecution of the Farr application for the patent in suit demonstrates that

from the start to finish of that prosecution Farr asserted that his invention resided in these passages changing in direction; *that this was the invention sought to be claimed.*" [Pltf. Memo. in Opp'n to Motion for Summary Judgment, p. 19.]

F. Background of the '479 Patent in Suit.

The history and background of the '479 patent in suit are helpful in attempting to determine what, if any, invention resides therein.

The application for the '479 patent was filed in the Patent Office on April 4, 1940, and it states that it was a "continuation" of an earlier application, Serial No. 285,-904, filed on July 22, 1939. The file-wrapper of the application for the patent in suit is in evidence as Plaintiff's Exhibit 1A [R. 843-938], and the file-wrapper of the earlier application Serial No. 285,904, later abandoned, is in evidence, as Plaintiff's Exhibit 1B [R. 939-955]. The first commercial sale of an air filter embodying the alleged invention of the patent in suit was March 23, 1940 [R. 316], and plaintiff, while relying upon the abandoned application Serial No. 285,904 to establish a date of invention of July 22, 1939, for the '479 patent in suit, made no attempt to establish any earlier date of invention. Consequently, plaintiff is limited by its own admissions to a date of invention not earlier than July 22, 1939, the filing date of the abandoned application.

The plaintiff, however, in the fall of 1937 commenced to make and sell an *air cleaner and cooler,* the first commercial sale being made on November 19, 1937 [R. 310-311]. Such devices have been made and sold commercially by the plaintiff since that date, and were made as illustrated in Farr patent No. 2,286,480 [R. 232, 304], here-

inafter referred to as the "Farr '480 patent," which is in evidence as DX-B [R. 1031]. Such device is referred to hereinafter as the "Farr '480 device."

The Farr '480 device, so far as the construction of the filtering media is concerned, was substantially like that of the Farr '479 patent in suit, as will be shown in detail hereinafter (pp. 43-46). For the present, it is sufficient to say merely that the uncontroverted evidence was that the only structural difference is that in the '479 filter there is a *change in direction* (*i. e.,* a "bend"), of the corrugations, whereas in the '480 device there is none. As pointed out above, this difference was asserted by plaintiff in the Court below as constituting the invention.

G. Patent Office History of the '479 Patent in Suit.

Plaintiff has conceded that the application for the '479 patent here in suit is a "continuation" of the earlier-filed Serial No. 285,904 [R. ....], and that the proceedings on the abandoned application PX-1B and the application for the '479 patent in suit PX-1A are all part of one transaction [R. ....]. Plaintiff states that while the '479 patent in suit shows only *one* form of the alleged invention (*i. e.,* alternate flat and crimped sheets of wire mesh), abandoned Serial No. 285,904 showed a number of other forms, including: (a) the "preferred" form shown in Figs. 1 to 4 of the Serial No. 285,904 drawing in which there are *no flat sheets of wire mesh,* and alternate corrugated sheets are disposed so that the crimps, or corrugations, are *inclined in opposite directions;* (b) the form shown in Figs. 5, 6 and 7 in which there are alternate corrugated and flat screen sheets, but no change in direction in the corrugations; and (c) Figs. 9 and 10, in which the corrugations change direction and flat screens optionally may

or may not be employed [R. ....]. Plaintiff concedes that the form shown in the '479 patent in suit was shown only by Figs. 9 and 10 of the abandoned Serial No. 285,904 [R. ....].

It is important to note that in the abandoned application Serial No. 285,904, the "preferred" form of the alleged invention was shown in Figs. 1, 2 and 3 [R. 951], in which there were *no flat screen members* and in which the "valleys" (*i. e.,* corrugations) of adjacent crimped screen members are *oppositely inclined.* As best shown in Fig. 3, the corrugations of one strip are angled in one direction relative to the face of the panel and the corrugations of the next adjacent strip are oppositely angled so that adjacent sheets are in contact *only* where the crests of the corrugations cross. By plaintiff's admissions, this form was not disclosed in the specification or drawing of the application for the '479 patent in suit. This form was also specifically claimed in claim 6 of the abandoned application, which was rejected by the Patent Office as unpatentable over the art [R. 953] and allowed by the applicant to become abandoned [R. 955]. As will be shown hereinafter, this specific form, not carried over into the '479 patent, substantially corresponds with defendants' accused air filter.

The application for the '479 patent, PX-1A, discloses in its specification and drawing only a single form of the alleged invention, *i. e.,* that in which there are alternate flat and crimped sheets of screen in which the corrugations of the crimped screens were provided with a "bend" or

"change of direction." We thus have here the rather unusual situation of an applicant filing a first application disclosing a number of forms of the alleged invention, and then filing a second application confined in its disclosure to only a single form. We shall contend hereinafter that this resulted in an express abandonment of all forms not carried over into the application for the '479 patent in suit, and that, since defendants' accused filter is one form shown and claimed in the abandoned application and not carried over into the '479 application, there can be no infringement.

Plaintiff's counsel asserted that an essential element of the '479 patent in suit was a plurality of sheets of crimped wire screens arranged parallel to the direction of air flow and forming passages through the filter [R. 813]. Such a construction was claimed by original claim 1 of the application for the '479 patent [R. 850], was rejected by the Patent Office [R. 855, 886], and was cancelled by the applicant [R. 915]. This, then, cannot be the invention.

Plaintiff's counsel also asserted that the "progressive loading" of the '479 patent provided a new "mode of operation," in which part of the air goes through the screens and part along the passages [R. 814]. Original claims 10 to 14, inclusive, were submitted by the applicant Farr in his application for the '479 patent [R. 903], which attempted to cover broadly such "progressive loading," but they were withdrawn and cancelled by the applicant [R. 915]. Such "progressive loading" cannot be the invention, and this is confirmed by plaintiff's expert Duncan

who admitted in his prior art chart, PX-32 [R. 986-986A], that such progressive loading was old in the prior art patents to Henshall, Orem, and Merryweather.

During the prosecution of the application for the '479 patent in suit, plaintiff's present counsel, as solicitors for the applicant, erroneously represented to the Patent Office that

> "Previous to the invention of the air filter of the above-entitled Farr application, *all air filters* intended to remove dust from air by employing the property of wire mesh to retain dust particles on the impingement of the particles thereagainst were constructed with the plane of the wire mesh at right angles to the intended direction of passage of the air through the filter panel" [R. 880],

and filed an affidavit to this same effect by R. S. Farr [R. 858], son of the applicant and now president of the plaintiff corporation. At the trial below, Mr. Farr testified that all his statements in such affidavit were still true [R. 275], although plaintiff's expert Duncan freely admitted that it was old in the prior art patents to Orem, Merryweather, and Row (British), and in the Farr '480 device, to use wire screen generally parallel to the air flow and not at right angles [see PX-32; R. 986-986A].

Finally, plaintiff's counsel obtained the allowance of the '479 patent in suit upon representing that its novelty lay in the fact that it provided "substantially *triangular* passages small in cross-section and entirely surrounded by the mesh of the screens" [R. 920-922]. Upon the strength of this purported distinction, the Patent Office granted the '479 patent. But it should be remembered that the prior use Farr '480 air cleaner and cooler, which included such *triangular passages,* was unknown to the Patent Office

(although fully known to plaintiff and its present counsel and witnesses) when such argument was presented to the Patent Office.

It will thus be understood from the representations and admissions of plaintiff, its counsel, and its expert witnesses that the novelty, if any, to be attributed to the '479 patent is extremely minute, and that at best the advance in the art was minor in nature. This is confirmed by the prior art in evidence, which is generally reviewed in the next section.

H. The Prior Art—Generally.

Plaintiff freely admits that all of the elements of the claims of the '479 patent in suit are separately old in the art [R. 803]. No contention has been made by plaintiff that the individual elements operate any differently in their asserted combination in the '479 patent than they did in the prior art, and there is no evidence to support such a contention. Indeed, it will be clearly apparent to this Court that all of such elements in fact operate the same way in the patent in suit that they operated in the prior art.

First, while the '479 patent teaches the use of wire screen members, it does not specify the size of the wire mesh. The commercial air filters made by plaintiff under the '479 patent, however, use ordinary fly screen such as is used in house windows. The use of fly screen as a filter media is very old in the art, and this Court can take judicial notice that such an ordinary window screen is an excellent dust collector and must be cleaned at least once each year, and that this has been known since the advent of such window screen. If dust-laden air is passed along or through such a screen, at least some of the dust

hits and sticks to the screen, making it an "impingement type" filter. It should also be noted that no adhesive coating is used on home window screens, yet dust sticks all too well! In any event, plaintiff's counsel admits that the use of such screen in air filters is old in the art [R. 815].

It was old in the art to coat a dust-collecting surface, such as wire screen, in an air filter with oil, and there is no novelty in such oil coating as is freely admitted by plaintiff [R. 88]. Other coating materials commonly interchangeably employed are various adhesives and water, as is fully taught by the Wood patent [R. 1034], and the Niestle (French) patent [R. 1069], and this was pointed out by Mr. Russell, defendants' expert [R. 447-448].

It was old in the art to make a filter *identical in construction* with that of the filter of the '479 patent, except that paper, cardboard, or other impervious material was used instead of wire screen. Such filters are referred to in the evidence as the "Detroit Air Filter" and are exemplified by physical exhibits PX-16, DX-C, and DX-N, which are shown and described in the Kaiser patent [R. 1022] and the Manning patent [R. 1026; 403-405]. Mr. Lyon, plaintiff's counsel, conceded that if the Detroit Air Filter had been made of fly screen in the prior art, plaintiff would have no case here [R. 815]. Thus, so far as the Detroit Air Filter is concerned, the only difference between its construction and that of the '479 patent in suit is the use of fly screen in place of cardboard, and

fly screen, of course, was an admittedly old and well-known filtering material.

It was old in the art to make an air filter of identically the same wire screen construction as the '479 patent in suit, except that there was no bend or change of direction in the corrugations. This is the fact as to the Farr '480 device, in commercial use and on sale before any alleged invention of the '479 device, as pointed out hereinafter (p. 43). Abrupt changes of direction in filter passages through air filters, however, was old and well known, as shown by the prior art patents to Henshall, Slauson, Kaiser, Manning, Row (British), Moller (British), and Niestle (French), all as admitted by plaintiff's expert Duncan [PX-32, R. 986-986A]. It was a common expedient to obtain turbulence in the air flow.

Even the "progressive loading" mode of operation of the '479 filter was old in the art, as admitted by Mr. Duncan, plaintiff's expert, the same being fully taught and achieved in the air filters shown in the prior art patents to Henshall, Orem, and Merryweather [PX-32, R. 986-986A].

It is revealing to note that, although Finding of Fact 4 [R. 59] specifies the mode of operation of the Farr '479 filter, this is *no* finding that such mode of operation is *novel* in the filter art. Findings 10, 11, 12 and 13 specifically find that such mode of operation is not found in certain specific prior art patents in evidence, but there is no finding that such mode of operation is not present in the prior art patents to Henshall, Greene, Preble, Orem,

Merryweather, or the Farr '480 device, and plaintiff has specifically admitted that such mode of operation is present in at least the prior art patents to Henshall, Orem, and Merryweather [PX-32, R. 986-986A].

I. Defendants' Accused Device.

The accused Air-Maze air filter is referred to in the evidence as the "P-5" (not to be confused with the "P-5 Obsolete," as to which there is no charge of infringement). It is exemplified by physical exhibit PX-12, and its filter media is exemplified most clearly in physical exhibit PX-6. It is shown and described in the Schaaf patent, DX-00 [R. 1080], issued to defendant Air-Maze [R. 537].

As the Court will immediately note from the physical exhibits, the Air-Maze "P-5" filter media has *no flat sheets* of screen designated 9, shown and described in the '479 patent in suit, nor any equivalent thereof. In the P-5, each of the sheets of fly screen is provided with "Z-shaped" corrugations, and alternate sheets are laid together so that *the corrugations are reversed in direction*. This permits the screen sheets to be stacked without nesting and without any flat intermediate sheets of screen. In it, the only contacts between adjoining sheets of screen are at the crests of the corrugations where they cross [R. 237-238]. This is clearly shown in the sketch DX-J [R. 1066], in which the small circles indicate the points of contact between the crests of corrugations in adjacent sheets of screen, the corrugations in one screen sheet being shown in green and those of the adjoining sheet being shown in red. DX-J also illustrates how the corrugations of adjoining sheets in the P-5 filter are angled in opposite directions.

In the accused P-5 filter, there are no well-defined passageways which are wholly enclosed by wire mesh and which extend from one face to the other face of the filter, as in the '479 patent in suit. In the P-5, the space between adjoining layers of wire screen is entirely open laterally except for the contact points where the corrugations cross and the crests engage each other. The evidence was that there are no passages of triangular cross section in the P-5, the cross section of such openings being of varying and non-uniform cross section [R. 539], whereas in the '479 patent each passage through the filter is triangular in cross section and well defined from front to back.

In operation, the air flow is quite different in the Air-Maze P-5 filter than it is in that of the '479 device as the panels start to clog with dust, and this is a fundamental difference in the way in which they load with dust and operate [R. 555-556]. In the P-5 filter there is no single pathway of uniform cross section between the screen members, as in the '479 filter, the air breaking up into a large number of filaments as shown in DX-J [R. 557]. In physical Exhibit SS, the strings illustrate the various channels the air might take in going through the P-5 [R. 563-564], the individual air streams mixing laterally as well as flowing through the filter [R. 668-669]. Plaintiff's photographs, Exhibits 9 and 14, respectively, graphically illustrate that the distribution of dust throughout the Air-Maze P-5 is much more uniform than in the Farr '479 filter, upon which the experts on both sides agreed [R. 207; 547-549], and Professor Rowley pointed out that this indicates a difference in their mode of operation [R. 558-560].

III.

Specifications of Error in the Findings of Fact of the District Court.

1. Finding 5 [R. 60] is erroneous in finding that prior art air filter panels made of screen wire positioned so that the air was introduced perpendicular to the plane of the wire, and paper air filters as referred to therein, did not have the mode of operation or achieve the advantages of the Farr '479 patent in suit, because unsupported by and contrary to the evidence (see pp. 39 *et seq., infra.*).

2. Finding 6 [R. 60] is erroneous in finding that air filter panels of the Farr '479 patent in suit combine the ability to provide a high efficiency in removing dust from air with a lower pressure drop than previous commercially built filters, which pressure drop did not increase as rapidly as the filter became loaded with dust (see pp. 7-11, *infra*), and erred in finding that the filter of the '479 patent in suit provided any further advantages of low cost of manufacture or maintenance or permitted ease of cleaning, because unsupported by and contrary to the evidence.

3. Finding 7 [R. 60] is erroneous in finding that the patent in suit had any commercial success or was responsible for the development of the business of the plaintiff, because unsupported by and contrary to the evidence (see p. 38, *infra*).

4. Finding 8 [R. 61] is erroneous in finding that the air filter of the claims of the patent in suit was not disclosed in any of the prior art or prior uses in evidence, because contrary to the evidence (see pp. 47-54,

infra), and erred in failing to find that such prior art and prior uses disclose substantially the same construction used in substantially the same way to produce substantially the same result (see pp. 47-54, *infra*).

5. Finding 9 [R. 61] is erroneous in finding that the '479 patent in suit does not disclose an aggregation, and in finding that it does disclose a new combination of elements which cooperate to provide any advantage in the cleaning of air or benefits in cost of manufacture, maintenance, or upkeep, because contrary to and unsupported by the evidence (see pp. 27-38, *infra*).

6. Finding 10 [R. 61] is erroneous in finding that the prior art patents referred to therein do not disclose filter panels operating on the principle of impingement of particles on collecting surfaces or do not remove dust by the same mode of operation referred to in Finding 4, or achieve the advantages of the '479 patent in suit, because unsupported by and contrary to the evidence (see pp. 17-19; 28, 31, *infra*).

7. Finding 11 [R. 61] is erroneous in finding that the prior art patents specified therein do not possess the mode of operation referred to in Finding 4 or achieve the advantages of the '479 patent in suit, because unsupported by and contrary to the evidence (see pp. 17-19; 28, 31, *infra*).

8. Finding 12 [R. 62] is erroneous in finding that the prior art patent to St. Cyr does not disclose an air filter panel which operates by the impingement of particles on collecting surfaces, and erred in finding that in the St. Cyr patent the crimps change direction only slowly and do not provide passages which change abruptly in

direction, and erred in finding that the device of the St. Cyr patent is not adapted to perform by the same mode of operation referred to in Finding 4 or achieve the advantages of the device of the '479 patent in suit, because each thereof is unsupported by and contrary to the evidence (see pp. 47-51, *infra*).

9. Finding 13 [R. 62] is erroneous in finding that the French patent to Niestle does not operate by the same mode of operation referred to in Finding 4 or achieve the advantages of the Farr patent in suit, because unsupported by and contrary to the evidence (see pp. 51-54, *infra*).

10. Finding 14 [R. 63] is erroneous in finding that prior to the alleged invention of the '479 patent in suit, the art expended great or any effort or money in scientific study or testing of different air filter panels without the panel of the '479 patent in suit being suggested thereby, because unsupported by and contrary to the evidence (see p. 42, *infra*).

11. Finding 15 [R. 63] is erroneous in finding that the '479 patent in suit had marked or any commercial success, and that the prior art failed to produce an air filter having a mode of operation or achieving the advantages thereof, and finding that claims 4, 5, 7, and 8, or any of them, of the patent in suit define a patentable combination or represent an invention and not mere mechanical skill, because unsupported by and contrary to law and the evidence. (See pp. 27-38, *infra*).

12. Finding 19 [R. 64] is erroneous in finding that defendants' P-5 air filter panels are essentially or basically the same as the air filter panels of the '479 patent in suit, because unsupported by and contrary to the evidence. (See pp. 63, *infra.*)

13. Finding 21 [R. 64] is erroneous in finding that claims 4, 5, 7, and 8, or any of them, of the '479 patent in suit, are not limited to the use of flat screen wire and were not intended by the Patent Office or the patentee to be so limited, because unsupported by and contrary to the evidence. (See pp. 57-62, *infra.*)

14. Finding 22 [R. 65] is erroneous in finding that claims 4, 5, 7, and 8, or any of them, of the '479 patent in suit are not limited and were not intended by the Patent Office or the patentee to be so limited to the use of crimped wire screen, all of which had the angles of the crimp extending in the same direction, because unsupported by and contrary to the law and the evidence. (See pp. 57-62, *infra.*)

15. Finding 23 [R. 65] is erroneous in finding that the filing of the application for the '479 patent in suit did not abandon any of the forms of air filter shown in prior application Serial No. 285,904, and that the file-wrappers of said applications do not contain any abandonment or estoppel such as would prevent the claims in suit from including defendants' P-5 air filter panels, because contrary to the law and unsupported by and contrary to the evidence. (See pp. 57-62, *infra.*)

IV.

Summary of the Argument.

Point 1.—The '479 patent in suit is invalid for lack of invention because it is merely for an assemblage of old elements which operate in substantially the same way to produce the same results as they did in the prior art, with no new, surprising, or unexpected results.

Point 2.—The '479 patent in suit is invalid for lack of invention over the prior art Detroit Air Filter, as no invention was involved in merely substituting wire fly screen for cardboard therein.

Point 3.—The '479 patent in suit is invalid for lack of invention over the prior use Farr '480 air cleaner and cooler, as no invention was involved in merely adding a bend or change of direction to the corrugations thereof.

Point 4.—The '479 patent in suit is invalid for lack of invention over either the prior patents to St. Cyr or Niestle (French).

Point 5.—All the claims of the '479 patent in suit are invalid for failing to comply with 35 United States Code, Section 33, in that the only possible feature of novelty thereof is functionally defined merely in terms of result.

Point 6.—Defendant P-5 filter does not infringe the '479 patent in suit because: (a) the patentee Farr abandoned the P-5 type of construction; and (b), by file-wrapper estoppel, is estopped from construing the claims in suit as infringed by such P-5 filter.

Point 7.—Defendants' P-5 filter does not infringe because it differs substantially in construction from that of the '479 patent in suit.

V.
ARGUMENT.

Point 1. The '479 Patent in Suit Is Invalid for Lack of Invention Because It Is Merely for an Assemblage of Old Elements Which Operate in Substantially the Same Way to Produce the Same Results as They Did in the Prior Art, With No New, Surprising, or Unexpected Results.

All of the elements of each of the claims in suit of the '479 patent are admitted by the plaintiff to be old and well known in the art. Mr. Lyon, plaintiff's counsel, expressly so admitted [R. 803], and this is graphically illustrated in the prior art chart, PX-32 [R. 986-986A] submitted and adopted by plaintiff's expert Duncan. While the District Court found [F. 9, R. 61] that the '479 patent discloses a new combination of "old elements," it failed to find that such old elements "perform any additional or different function in the combination than they perform out of it," as seems to be required by the Supreme Court in *Great A. & P. Tea Co. v. Supermarket Equipment Corp.,* 340 U. S. 147, at 152.

There was no factual evidence whatever offered by plaintiff to attempt to show that any of the elements of the '479 filter operate any differently in the alleged combination than they did separately in the prior art, nor was there even any expert opinion to such effect. There was no evidence whatever that the bringing together of such old elements in the '479 filter produced any unusual or surprising consequences. The most that has been contended for by the plaintiff is that the '479 patent, as a result of the combination of old elements, produced an air filter which has a relatively high filtering

efficiency combined with a low pressure drop rise during its life. This, we suggest, is not enough to sustain the validity of the '479 patent for a mere combination of old elements. It is our position that if there be *any* "improved" results flowing from such combination of old elements, they differ at best in but slight degree from those of prior air filters. The results, obviously, do not differ in kind.

To establish positively, however, that each of the elements of the '479 patent in suit operates in the asserted combination thereof in the same way that it operated in the prior art, claim 7 in suit, which is representative, is discussed element by element as follows, each of the elements thereof being quoted and italicized.

Claim 7 in suit is directed to:

> *"An air filtering panel operating on the principle of impingement of particles on a collecting surface,"*

All of the prior art in this case is directed to air-filtering devices which operate on the *impingement principle.* Plaintiff's prior art chart PX-32 [R. 986-986A] admits this as to most of the prior art in evidence. As admitted by Mr. Duncan, plaintiff's expert, in impingement type filters, dust particles impinge upon a screen or other collecting surface and stay there, as distinguished from a filter in which the air passes through holes which are smaller than the dust particles so as to strain out the particles [R. 760-761], the latter type of filter not being involved in this action. Obviously, in the '479 filter the dust impinges on and sticks to the wire mesh just as it does in the prior art filters of the impingement type and on ordinary window screen in a house. The District Court, in Finding 10 [R. 61],

specifically found that the filters of the prior patents to Wood, Kirkham, Row, and Moller did not operate "on the principle of impingement of particles on collecting surfaces and do not remove dust by the same mode of operation referred to in Finding 4." The error in this is obvious, as even plaintiff's expert Duncan admitted that the Row (British) patent [R. 1051] removes dust on the impingement principle [R. 782], and that the Kirkham (British) patent [R. 1047] operates the same way [R. 764]. Similarly, in both the Wood [R. 1034] and Moller [R. 1058] patents, the dust hits and sticks to solid collecting surfaces coated with oil or other adhesive. So far as *dust removal* is concerned, all of the prior art in evidence operates on the *impingement principle.*

"which panel includes mesh screening members"

As admitted by plaintiff's prior art chart, PX-32 [R. 986], many of the prior art patents show the use of wire mesh screen. In all of them the screen operates to collect dust by the impingement principle, which is its function in the '479 filter. For example, in the Merryweather patent [R. 1019] it is plain that dust-laden air strikes the screen members and the dust is removed from the air by impingement just as in the '479 filter, as was admitted by plaintiff's counsel to the Patent Office during the prosecution of application for the '479 patent [R. 919].

"[the members being] *constructed and arranged to form passages extending through the panel"*

Plaintiffs admit that most of the prior art filters in evidence include such "members" so constructed [PX-32, R. 986], whether the members are wire screen as

shown in the patents to St. Cyr, Merryweather, Orem, Farr '480, Row (British) or Niestle (French), perforated plates as shown in Henshall, or solid plates as shown in Slauson, Kaiser, Manning, Wood, or Moller (British). In every one of the prior art patents (with the exception of the Greene patent) such passages are used to provide air paths through the filter, just as in the '479 patent in suit. For example, in the St. Cyr patent [R. 989], it is plainly stated that the corrugations or passages provide "canals or conduits for the air and vapor" (p. 2, Col. 1, lines 59-60); in the Henshall patent [R. 993] air passages are provided between the herringbone filtering plates 16, 17, 18, and 19; and similarly in the other prior art references.

> "[the passages being] *of relatively large size as compared with the openings in said mesh members,"*

In all of the prior art showing wire mesh or perforated plates forming passages through a filter, the openings in the mesh or plates are small compared with the size of the passages, exactly as claimed. Plaintiff admits this as to most of such prior art [PX-32, R. 986]. It is also true in the Henshall patent and Niestle (French) patent.

> *"said passages subdividing the panel in both dimensions perpendicular to the general direction of flow of the medium to be filtered"*

Again, plaintiff admits that in *eleven* of the *fifteen* prior art patents in evidence, the passages through the filter so subdivide the panel [PX-32, R. 986]. There

is nothing in the specification of the '479 patent or in the evidence to show any particular result of such subdivision. In fact, it is not even mentioned in the '479 specification. Obviously, however, whatever advantage, if any, derived from it in the '479 filter is similarly derived in the prior art filters having the same construction.

> *"and* [said passages] *being so constructed and arranged that as the mesh of the members becomes progressively clogged the medium to be filtered may flow through such passages and encounter unclogged openings in said mesh members,"*

This clause of claim 7 is purely functional as to the result obtained, and adds nothing to the structure attempted to be defined by the claim. In any event, plaintiff admits that the passages in some of the filters of the prior art operate in exactly the same way, making this admission as to the patents to Henshall, Orem, and Merryweather [PX-32, R. 986].

This method of operation, so admitted by the plaintiff to be old in the art, is the only "new mode of operation" which the plaintiff in the same breath claims for the '479 filter [Mr. Lyon, R. 814]. It is the "progressive loading" extensively referred to in the evidence.

Mr. Duncan, plaintiff's expert, additionally admitted that the Detroit Air Filter (of the Kaiser and Manning patents) had "progressive loading" [R. 794], and that the filter of the St. Cyr patent may have some "progressive loading" [R. 793].

It is thus apparent, from such admissions by plaintiff's counsel and expert, that the passages of the prior art filters are constructed and arranged to give the same mode of operation specifically claimed for them in the claims of the '479 patent in suit, and that this is the only mode of operation asserted to be new in the filter of the patent in suit.

"said passages changing in direction."

The passages of the '479 filter have a bend and change in direction, by reason of their herringbone configuration, and the purpose thereof in the '479 patent is to insure "that the air flowing through the panels will have its dust particles thoroughly impinged against the screen wire of the members 4 and thereby deposit the dust load" [R. 840, Col. 2, lines 36-43]. In other words, the purpose of such "change in direction" is to insure turbulence of the air passing through the filter.

Plaintiff admits that filter passages having such change in direction are old in the art in the patents to Henshall, Slauson, Kaiser, Manning, Row (British), Moller (British), and Niestle (French) [PX-32, R. 986]. That the bends operate to create such turbulence of air flow in the prior art is, we believe, obvious. However, that it is the fact is perfectly clear from the prior art patents themselves. *See:* the Preble patent [R. 1002, p. 1, Col. 2, lines 74-86]; the Kaiser patent [R. 1022, p. 2, Col. 1, lines 23-29]; the Manning patent [R. 1026, p. 1, Col. 2, lines 46-52].

The other claims 4, 5, and 8 of the '479 patent in suit likewise, by plaintiff's similar admissions, contain similar elements that are all old in the prior art. The only

other element of such remaining claims which is not discussed above is that found in claim 4, as follows:

> *"members extending in the general direction of the intended flow of the medium to be filtered,"*

Plaintiff admits that *twelve* of the *fifteen* prior art filters have such a construction [PX-32, R. 986], and the '479 patent in suit states that "arranging the screens in the filter panel in such a manner as to provide paths for air flow through the filter panel *along lines parallel to the plane or planes of the screens employed,* high filtering efficiency can be effected while at the same time there is obtained a lower pressure drop less affected by increased dust load." [R. 840, Col. 1, lines 32-39.] This operating characteristic of having the air flow *along lines parallel to the screens* was characterized by plaintiff in the court below as the "unique operating characteristic" of the '479 filter [R. 814].

Obviously, in the *fifteen* prior art filters in evidence which the plaintiff admits have filter members extending in the general direction of the air flow, the air flows along lines generally parallel to the filter members just as it does in the '479 filter. Plaintiff's expert Duncan admitted that in the St. Cyr patent the air flow is roughly parallel to the layers of wire screen [R. 775]; admitted that in the Henshall filter the flow was partly through the holes and partly along the passages and the surface of the perforated filter members [R. 743]; admitted that in the Preble patent the flow was generally parallel to the filtering members [R. 748-749]; and admitted that in the Orem filter the air flows along parallel to the wire screens [R. 751]. Defendants' expert Russell testified without contradiction that similarly there was such a flow parallel to the filter members in the patents to Farr

480 [R. 414], St. Cyr [R. 372], Henshall [R. 373-374], Slauson [R. 392], Orem [R. 395], Merryweather [R. 401-402], Kirkham (British) [R. 423-424], Row (British) R. 432-433], Moller (British) R. 453], and Niestle (French) [R. 467-468].

It is thus apparent that every element of the claims of the '479 patent in suit is not only old in the prior art in evidence but, in addition, every element operated exactly the same in the prior art filters as it does in the filter of the '479 patent.

So much for the facts. The law is plain to the effect that a patent for a new combination of old elements is invalid unless the elements operate differently in the combination than they did in the prior art. The rule has been aptly stated as follows:

> "Courts should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements. The function of a patent is to add to the sum of useful knowledge. Patents cannot be sustained when, on the contrary, their effect is to subtract from former resources freely available to skilled artisans. A patent for a combination which only unites old elements with no change in their respective functions, such as is presented here, obviously withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men. This patentee has added nothing to the total stock of knowledge, but has merely brought together segments of prior art and claims them in congregation as a monopoly."
>
> *Great A. & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U. S. 147 at 152.

Not only must the old elements operate differently in the combination than they did separately in the art, but there must be some unusual or surprising consequences resulting from the alleged combination to sustain the patent. This was recently stated and applied by this Court in *Photochart v. Photo Patrol, Inc.*, 189 F. 2d 625 (1951), as follows:

> ". . . There is no exact standard by which a court may determine when a combination of old elements constitutes invention and when it is within the mechanical skill of one working in the art. The most recent opinion of the Supreme Court on combination patents expresses the view that, 'courts should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements.' Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp., 340 U. S. 147. The test to be applied to such patents is that *the combination must perform some new or different function—one that has unusual or surprising consequences.* It is our view that the patent in suit fails to meet this severe test and does not constitute invention. The most that can be said for the patent in suit is that it rearranges the elements of the slit camera in such a manner that in the performance of their respective functions a higher degree of accuracy is obtained . . ."

The rule was stated and applied by this Court in the very recent case of *Himes v. Chadwick,* ..... F. 2d ....., 95 U. S. P. Q. 59 (C. A. 9th, 1952).

The rule was also recently stated and applied by the Court of Appeals for the Sixth Circuit in *United Special-*

ties Co. v. Industrial Wire Cloth Products Corp., 186 F. 2d 426 (1951), in which it held invalid three patents on *air filters.* There, the patent owner contended that its patented air filter construction increased air-filtering efficiency to over 95% and provided an economical device, but the Court disposed of this argument on the ground that, at best, the alleged new results differed merely in *degree,* which was not patentable. Such decision is obviously directly relevant to the facts in the present case.

Other recent decisions applying the strict test of invention in holding invalid patents to mere combinations of old elements are the following: *Vapor Blast Mfg. Co. v. Pangburn Corp.,* 186 F. 2d 230 (C. A. 4th, 1950); *Montgomery Ward & Co. v. Buer,* 186 F. 2d 614 (C. A. 6th, 1951); *Paramount Industries v. Solar Products Corp.* 186 F. 2d 999 (C. A. 2d, 1951); *General Bronze Corp. v. Cupples Products Corp.,* 189 F. 2d 154 (C. A. 8th, 1951); *Schreyer v. Casco Products Corp.,* 190 F. 2d 921 (C. A. 2d 1951); *F. C. Russell Co. v. Comfort Equipment Corp.,* 194 F. 2d 592 (C. A. 7th, 1952); *Hutchinson Mfg. Co. v. Mayrath,* 192 F. 2d 110 (C. A. 10th, 1951); *Ingersoll-Rand Co. v. Black & Decker Mfg. Co.,* 192 F. 2d 270 (C. A. 4th, 1951); *Penn. Crusher Co. v. Bethlehem Steel Co.,* 193 F. 2d 445 (C. A. 3rd, 1951).

As to results obtained from such alleged combination of old elements in the '479 patent, plaintiff contended in the Court below, and will undoubtedly contend here, that such combination resulted in an air filter having higher efficiency combined with a lower pressure drop rise than

had theretofore been achieved in air filters of this general type. Assuming, without admitting, that such contention is true (see pp. 7-11 above), any slight increase of efficiency or reduction in pressure drop rise, or both, would alter the results in degree only and not in kind.

Mr. Duncan, plaintiff's expert, testified that as to filters of the '479 type, they should be taken out of service and cleaned when the total dust load thereon reached between 500 and 600 grams of dust [R. 183-184], which is the intended life of the filter operation. The operation up to a 600-gram dust load, or for the duration of the particular test, whichever occurred first, is shown for the various air filters in evidence in chart form in Plate I annexed at the back of this brief. It provides a ready means of comparison of the various filters. Of the filters tested, shown in Plate I, the Air-Maze Type B and the Detroit Air Filter were in wide commercial use long prior to the '479 filter in suit, and are still made and sold in large quantities. They are remarkably like the Farr '479 filter in both filtering efficiency and in pressure drop rise during their normal life. Any differences in performances are merely matters of degree.

It is also to be noted that the witnesses were unanimous in the fact that a pressure drop rise of up to *0.5* inch of water is acceptable under standards set up by the industry for heating and ventilating applications [Duncan, R. 145, 146; Watterson, R. 338-339], and plaintiff's expert Duncan admitted that a pressure drop rise up to 0.5 inch would be perfectly satisfactory for most installations [R. 184-185]. As shown by Plate I, the pressure drop

rise of all of the filters tested, including the prior art, was well below the maximum permitted by the standards of the industry.

The District Court, in Finding 7 [R. 60], placed heavy reliance upon "commercial success" of the Farr '479 filter in support of its finding of invention. Such reliance indicates the doubt of the District Court as to invention, as otherwise commercial success would be irrelevant. Yet there is no evidence in this case that the commercial success of the Farr filter was due to any novelty in filter construction or to any alleged differences in results. No disinterested witness was called by plaintiff on this issue, although obviously if such commercial success could properly be attributed to such alleged novelty in construction or results available fact witnesses should have been plentiful.

It is therefore submitted that the '479 patent covers merely an aggregation of old elements which operate in substantially the same way to produce substantially the same result as they did in the art, and that no new, surprising, or unusual results can be attributed to the '479 filter by the mere bringing of such old elements together therein. Upon the law and the facts, the District Court's Finding 9 [R. 61] to the contrary is clearly erroneous. Obviously, a primary error of the District Court here was in using a standard of invention "less exacting than that required where a combination is made up entirely of old components" (*See: Great A. & P. Tea Co. Case, supra,* at p. 154.) All of the claims should be held invalid.

Point 2. The '479 Patent in Suit Is Invalid for Lack of Invention Over the Prior Art Detroit Air Filter, as No Invention Was Involved in Merely Substituting Wire Fly Screen for Cardboard Therein.

Plaintiff's counsel conceded in the Court below that if the Detroit Air Filter had been made of wire fly screen in the prior art, instead of paper, plaintiff would have no case here [R. 1134]. This was confirmed by the witness Brown, who during the trial actually made and tested a Detroit Air Filter made of fly screen and found that the filtering efficiency started at 83% and rose to 88%, with a pressure drop starting at 0.095 inch of water and rising to 0.14 inch [R. 692-694], which is almost identical with each of the results obtained by Mr. Duncan in his tests of the Farr '479 filter (see Plate I, *infra.*)

The question here presented, therefore, is whether, in the '479 patent in suit, it amounted to invention to make the Detroit Air Filter of wire fly screen instead of paper or cardboard.

The paper Detroit Air Filter is exemplified by physical exhibits PX-16, DX-C, and DX-N, and is shown and described in the Kaiser patent, DX-B, Tab 8 [R. 403-404]. Such filters have been made and sold commercially since about 1932, and are still being sold in quantity by defendant Air-Maze [R. 191, 330], and are very satisfactory [R. 330]. They are made in the same dimensions as the Farr '479 filter and are used interchangeably with the Farr filter in ventilating systems [R. 191-192]. The Detroit Air Filter is a "throw-away" type which the

user merely throws away when it gets dirty, instead of cleaning it [R. 192], and costs only about $1.25 as compared with a cost of $7.00 or $8.00 for the same sized Farr '479 filter [R. 213-214].

The tests in evidence of the commercial Detroit Air Filter made of cardboard, as shown in Plate I at the end of this brief, plainly establish that it has substantially the same performance characteristics as to both efficiency and pressure drop as the Farr '479 filter. When made of fly screen, the results are about the same, and do not differ in kind.

Assuming that a slight increase in filtering efficiency and a slight reduction in pressure drop rise are to be obtained by making the Detroit Air Filter of fly screen instead of cardboard, as is confirmed by Mr. Brown's test of such a filter, referred to above, we submit that such a mere substitution of materials did not amount to invention in the Farr '479 patent.

Wire fly screen was old and commonly used in air filters long prior to the '479 patent in suit, as admitted by plaintiff. Air will obviously pass through it, to produce increased turbulence if that is desired, and such turbulence obviously will increase filtering efficiency in an impingement type filter, as there is more chance of the dust contacting a solid dust-collecting surface. In making such substitution of material, all that Farr did in the '479 patent was to take advantage of the known and obvious characteristics of fly screen.

The applicant Farr and plaintiff's present counsel represented to the Patent Office that by reason of such sub-

stitution of materials, the Farr filter obtained "progressive loading," where part of the air goes through the mesh and part along the mesh, which, they represented, was a wholly new result in the air filter art [R. 910-912]. Plaintiff *now* concedes, however, that the "progressive loading" with the use of wire screen of the '479 filter is disclosed in the prior art patent to Orem [PX-32, R. 986]. The Orem patent was not considered by the Patent Office in connection with the application for the '479 patent in suit, and, we suggest, had it been and had plaintiff's counsel then conceded that Orem teaches such progressive loading with wire screen, the Patent Office never would have granted the '479 patent. Moreover, the Patent Office had no knowledge of the Farr prior use '480 air cleaner and cooler, which taught the use of fly screen in a filter device of substantially the same construction as the Detroit Air Filters of the Kaiser and Manning patents. Such facts and concessions before this Court were not before the Patent Office.

Under the law, the mere substitution of one well-known material for another, to take advantage of the known characteristics of the material substituted, and without any new result different in kind, is not invention. The rule was stated and applied by this Court in *United States Appliance Corp. v. Beauty Shop Supply Co., Inc.,* 121 F. 2d 149 (1941), in which it stated at page 150:

> "A substitution of one material with known characteristics for another material does not rise to the dignity of invention."

To the same effect, *see: Heath v. Frankel,* 153 F. 2d 369 (C. C. A. 9th, 1946); *Kasser Egg Process Co. v. Poultry Producers,* 50 F. 2d 141 (C. C. A. 9th, 1931).

It is therefore submitted that the claims in suit of the '479 patent are invalid because the mere substitution of wire fly screen for cardboard in the Detroit Air Filter does not amount to invention.

The District Court was under the misconception that the art labored long and hard to find a filter such as that of the '479 patent in suit (See Finding 14 [R. 63], and Memo. Op. [R. 821-822]). In this conclusion, the trial Court relied upon a filter study made by the Association of American Railroads in 1938, the results of which are reported in PX-27. This report PX-27 was mere hearsay and was erroneously admitted into evidence over defendants' objection [R. 659-660]. In any event, it does not support in any way the trial Court's conclusion. The report, as is clearly evident from its contents, was merely a test comparison of various air filters then on the market and "suitable for passenger car service" [See p. 1 of PX-27], and its obvious purpose was merely to provide the railroads with test data upon which they could select filters for their respective uses. The report plainly was not an effort "to find what apparently the plaintiff put together here in a combination," as stated by the District Court [R. 822]. Such importance, erroneously accorded by the District Court to PX-27, illustrates the obvious error that runs throughout the entire decision of the District Court.

Point 3. The '479 Patent in Suit Is Invalid for Lack of Invention Over the Prior Use Farr '480 Air Cleaner and Cooler, as No Invention Was Involved in Merely Adding a Bend or Change of Direction to the Corrugations Thereof.

As pointed out above (p. 12), the air filter and air conditioner shown in the Farr '480 patent [R. 1031] was sold and in commercial use long prior to any date of invention claimed by plaintiff for the '479 patent in suit.

The Farr '480 device was identical in the construction of the filter media with that of the Farr '479 patent in suit, except that the corrugations in the crimped screen go straight through on a diagonal and without any change of direction, which was conceded by plaintiff's witnesses [R. 306-309]. Such "change of direction" in the passages is asserted by plaintiff to be an essential element of the '479 patent in suit, and was even asserted by plaintiff to be the "invention" (see p. 11, *supra.*) The '480 filter media is shown in a photograph PX-26 in evidence [R. 975].

The filter media of the Farr '480 device was substantially disclosed in the abandoned Farr application Serial No. 285,904, PX-1B [R. 941-952], and is illustrated in the drawing thereof in Figs. 5, 6 and 7, and such abandoned application plainly indicates that such construction (without any bend or change in direction of the corrugations) was the *full equivalent* and alternative to the form shown in Figs. 9 and 10 thereof in which there was a bend or change of direction in the corrugations and which,

plaintiff asserts, is the form carried over into the '479 patent [R. .....]. Thus, it is plain that the applicant Farr considered the filter media of the '480 device, without any bend in the corrugations, to be the full equivalent of the filter media of the '479 patent having such a bend.

As stated in the '479 patent, the purpose of the "bend" is "to provide further assurance that the air flowing through the panels will have its dust particles thoroughly impinged against the screen wire of the members 4 and thereby deposit the dust load" [R. 840, Col. 2, lines 36-43]. Such bends or sharp changes in direction were old and well known in the art, where they served the same purpose (see pp. 19, 32, above) and we suggest that no invention was involved in the '479 patent in suit in adding such a "bend" to the corrugations of the prior use '480 device.

The '480 prior use device was not, of course, before the Patent Office during its consideration of the application for the '479 patent here in suit, and it did not have the benefit of the evidence before this Court as to the '480 device. If it had, we suggest, it would have made short shrift of plaintiff's claim to invention, since the only change in the filter media was the change of direction of the corrugations added in the '479 patent.

The '480 device was an air filter designed and adapted to remove dust from the air. The '480 patent states: "This invention relates to an air purifier or cleaner, *the function of which is to remove dust or impurities from air*" [R. 1032, Col. 1, lines 1-3]. That it so operated, is plain from plaintiff's sales literature, in which it is stated that "the rotor *is an excellent air filter and collects dirt*" [R. 1144], and was admitted to be a *good air filter* by Mr. R. S. Farr [R. 1095-1096; 1116].

In actual commercial use, the '480 device was used as a humidifier or air conditioner, and the rotor was coated with water for this purpose, instead of oil, although they are equivalents (see p. 18, above). The dust striking the water-coated screen would stick thereto and thus be removed from the air, and Mr. Duncan finally reluctantly admitted on cross-examination that the '480 device would collect dust on the "impingement principle" [R. 758-761]. By rotating the rotor through a water bath, the rotor was kept constantly wet and collected dust was intermittently washed off by the bath.

The plaintiff attempted to avoid the pertinent consequences of the '480 device by contending that since the dust is frequently washed out and is not allowed to collect therein, the mode of operation is different from that of the '479 filter in which the dust is allowed to collect and is only washed out at infrequent intervals. The District Court adopted this view [R. 819], and entered Finding 10 [R. 61] to this effect. The obvious error in this is that the '479 patent in suit is not concerned with the manner in which its filter is *cleaned* of dust, and does not mention this. The only concern of the '479 patent is the *removal of dust from the air.* As will be apparent, the method of operation of the '479 and '480 devices is substantially identical so far as such *dust removal* is concerned. Mr. Russell, defendants' expert, pointed this out in detail [R. 414-415]. The '480 patent makes it very plain that part of the air goes through the mesh of the wire screen and part goes along the passages formed by the corrugations [R. 1033, Col. 1, line 69, to Col. 2, line 15], which is exactly the same air action that takes place in the '479 filter.

The '480 device, obviously, has substantially the same structure and operates in substantially the same way as

the '479 to remove dust from air, and was actually so operated. In addition, Mr. Duncan conceded that if one wanted to use the '480 device simply as an air filter, and did not care about any humidifying effect, *it would be an obvious expedient and logical thing simply to dip the '480 rotor in oil, let it drain, and then put it back in place to act as a filter, and if so used it would catch dust* [R. 786]. This would simply be an obvious alternative use of the '480 device, and it was obvious to the applicant Farr, as his son R. S. Farr admits that *it was the success of the '480 humidifier in removing dust that suggested building the '479 filter as a simple dust filter using the same principle* [R. 1096], and the same thing was admitted by his other son M. S. Farr [R. 293].

Since the only difference between the '479 patented filter media and the '480 device was the "bend" in the corrugations to create added air turbulence, and since such "bends" for the identical purpose were old in the prior filter art, and since the '480 device was actually used as a dust filter and made an "excellent filter" in removing dust, we submit that no invention was involved in merely adding the "bends" in the corrugations and using oil instead of water as the dust-collecting agent. Neither oil nor water is an element of the claims in suit. We suggest that such changes would be obvious to one skilled in the art and were, in fact, obvious to the patentee Farr when he designed the '479 filter. We submit that Finding 10 [R. 61] is clearly erroneous, and that the claims in suit of the '479 patent are clearly invalid.

Point 4. The '479 Patent in Suit Is Invalid for Lack of Invention Over Either the Prior Patents to St. Cyr or Niestle (French).

(a) The St. Cyr Patent.

The District Court confessed to having more trouble with the St. Cyr prior art patent [DX-B, R. 989] than any of the others, and, in its Memorandum Opinion, the only structural distinction it could point to was that although St. Cyr discloses a change in direction in its passages or corrugations, such change was not "abrupt" as in the '479 patent in suit [R. 819-820]. The Opinion also states as to St. Cyr: "I do not see how it could be adapted and perform the same function as the plaintiff's patent in suit here" [R. 820]. The District Court then found [F. 12, R. 62] that St. Cyr does not show an air filter panel operating on the "impingement" principle, and that it is not "adapted to perform by the same mode of operation referred to in Finding 4" (which is "progressive loading"). Such conclusions and opinions are clearly erroneous, as they are entirely contrary to the evidence, as will be shown.

That the St. Cyr patent discloses a filter or analogous device is *res judicata* between the parties to this action. In an earlier action, *Air-Maze Corp. v. Temperatair, Inc., and the Farr Co.,* decided in the District Court for the Southern District of California in 1943, in which the defendant (the plaintiff in the present case) prevailed as to a charge of infringement by Air-Maze on the Greene filter patent No. 1,566,088 [DX-B, R. 997], the disclosure

and pertinency of the St. Cyr patent were issues and in its findings of fact in that case [PX-17, R. 957-961], the District Court found as follows:

> "III. It is old in *this* and *analogous* arts to pass the air or gas parallel to the screens, as for example in *Saint Cyr,* 1,118,237; *Row* (British) 13,222. . . ."
>
> "VIII. It is old in *this* and *analogous* arts to use corrugated screens to space layers of foraminous materials *to form a filter as shown in the patents to . . . Saint Cyr* 1,118,237. . . ."

The foregoing is a prior judicial determination between the parties to this action that the St. Cyr patent does disclose a filter and is in an analogous art.

The St. Cyr construction is illustrated by physical exhibit DX-V, and includes alternate flat and corrugated wire screens, the corrugations (as shown in Fig. 5 thereof) being at an angle with the edge of the screen so that when rolled up they will be helical in form [R. 364]. There is no question in the evidence that the passages of St. Cyr "change in direction," and the District Court so stated in its Memorandum Opinion [R. 820] and so found [F. 12, R. 62], indicating that the only distinguishing structural feature is that they do not change "abruptly" in direction as in the '479 device. Claims 4, 5 and 7 of the '479 patent in suit are not limited to an "abrupt" change in direction, although claim 8 is so limited. Consequently, unless "abruptly" is read into claims 4, 5 and 7 in suit they read directly upon the St. Cyr patent disclosure. Actually, in the St. Cyr device [*see* DX-V] the exit end of each corrugation is displaced about 180° from the inlet end thereof, which would appear to us to be an "abrupt" change in direction. In the Farr '479 patent,

the change in direction is only about 60°! We therefore submit that every structural element of the claims of the '479 patent here in suit is found in the St. Cyr patent, which shows the error in the District Court's finding to the contrary. In addition, we submit that no invention would be involved in making the change of direction of the St. Cyr passages more or less "abrupt," in view of the many other prior art patents showing passages having abrupt changes of direction identical with that of the '479 patent in suit (*e. g.,* Henshall [R. 993], Slauson [R. 1008], Kaiser [R. 1022], Manning [R. 1026], etc.).

The second error that the District Court fell into with regard to the St. Cyr patent was in holding that its device *could not* be adapted to perform the same function as the '479 patent in suit. The error in this will be obvious from admissions in the testimony of Mr. Duncan, plaintiff's expert, discussed as follows.

Mr. Duncan, plaintiff's expert, conceded that *there is considerable similarity between the Farr '479 filter and the St. Cyr device* [R. 776], that the St. Cyr device would act as a filter and would collect particles of dirt [R. 775], that the "wire gauze" of the St. Cyr patent may be and commonly is used for dust filtering [R. 778], that the filtering action of such "wire gauze" would be substantially the same as any other screen members [R. 779], and that in St. Cyr the purpose of the angle of the "screen" corrugations is to assure a change in direction of the air flow through the device and will give better "impingement" of the dust particles on the "screen" to prevent them from going straight through without having an opportunity to impinge on a "screen" [R. 777], and admitted that some sort of light "progressive loading"

would take place [R. 793]. Thus, the operation of the St. Cyr device in the removal of dust from air would be substantially similar to that asserted for the '479 filter here in suit, which was additionally pointed out in detail by defendants' expert Russell [R. 366-370]. Finally, Mr. Duncan admitted that if one desired to have a combined flow either along the passages or through the mesh of the screen of St. Cyr, it would be easy to select the right weight oil to use to prevent clogging of the screen [R. 789-793].

The St. Cyr device was obviously intended to be used in the air intake of the carburetor of an internal combustion engine, such as an automobile. The Farr '479 filters are likewise used on the air intakes of Diesel railroad engines and internal combustion engines and carburetors therefor [R. 278-279]. As so used, they will both remove dust from the air, and in exactly the same manner. Since the claims of the '479 patent in suit read directly upon the St. Cyr device, and since they operate in the same manner, we submit that the '479 patent in suit is wholly anticipated by and invalid over the St. Cyr patent. We suggest that, although the St. Cyr patent in fact shows an air filter which will naturally remove dust from the air, even if it did not do so, no invention was or could be involved as a matter of law in merely adapting it to such a use. As pointed out by this Court in *Bingham Pump Co. v. Edwards,* 118 F. 2d 338 (1941):

> ". . . It is clear that Appel did not conceive of the use of his device as appellee conceives his. However, if Appel's device can be used for the same purpose, it is immaterial whether he conceived of that use. Daily v. Lipman, Wolfe & Co., 9 Cir., 88 F. 2d 362, 364, and authorities cited. Therefore,

the fact that Appel did not know that his device could be used for the same purpose as appellee's device does not preclude the defense of anticipation.

"There remains the question as to whether Appel's device does anticipate appellee's device. The differences between the two devices, as stated above and as related by witness McDougall, are in the form or shape of such devices. Are the changes in Appel's device made by appellee sufficient to impart invention to appellee's device? We think not. The rule on that point is an aged one, and is stated in Smith v. Nichols, 21 Wall. 112, 88 U. S. 112, 119, 22 L. Ed. 566, as follows: '* * * But a mere carrying forward or new or more extended application of the original thought, a change only in form, proportions, or degree, the substitution of equivalents, doing substantially the same thing in the same way by substantially the same means with better results, is not such invention as will sustain a patent. * * *' . . .

"Here, the most that can be said for appellee's device is that appellee extended the application of Appel's device, and changed the form thereof. The two devices do the same thing, *i. e.,* prevent wear of the housing. They do it in the same way, *i. e.,* by causing the wear to be absorbed by the liner instead of the housing. Are substantially the same means used? We think they are. . . ."

We submit that the '479 patent in suit is entirely anticipated by, and lacking in invention over, the St. Cyr patent.

(b) The Niestle (French) Patent.

The Niestle (French) patent [R. 1062, 1069] shows an air filter composed of wire mesh members which form zigzag passages through the filter conforming to the pas-

sages of defendants' accused P-5 filter [R. 798]. Its construction is illustrated by physical exhibit DX-DD [R. 795-796]. The passages subdivide the filter panel in both dimensions perpendicular to the general direction of the flow of air through the filter, just as in the '479 patent in suit [R. 463-464]. It contains every element of the claims of the '479 patent in suit (*see* claims 7 and 8, in particular).

The Niestle patent states that the opening in the wire mesh *may* be small enough so that the oil in which the filter is dipped will completely fill such openings to form "a continuous, thick film of oil, favoring the deposition of the dust suspended in the gas" [R. 1073, line 5]. It nowhere states that the opening *must* be that small. Even if all of the mesh openings were completely filled with oil, the Niestle filter would obviously have the same sort of "progressive loading" that plaintiff's expert Duncan admits would be found in the Detroit Air Filter (*see* p. 40-41, *supra*).

The District Court interpreted the Niestle patent as *necessarily requiring* that the openings would fill with oil to prevent air from flowing through the mesh of the screen [Mem. Op., R. 819; F. 11, R. 62]. While we suggest that this is erroneous as unsupported by the disclosure of the Niestle patent, we believe it is immaterial, for, obviously, the District Court wholly failed to consider whether any invention would be involved in selecting a proper size mesh and oil for the Niestle filter to permit the "progressive loading" of the '479 patent.

The '479 patent in suit wholly fails to specify the size of the mesh openings in its screen members or the kind of oil in which it is to be dipped. Mr. Duncan, however, testified that this could readily be determined by anyone skilled in the art [R. 252]. As to the St. Cyr patent, Mr. Duncan likewise testified that anyone skilled in the art could readily select the proper-sized mesh and the proper oil to permit part of the air to go through the mesh and part along the passages [R. 791-792]. By the same token, we say, anyone skilled in the art could readily select the proper-sized mesh openings and the proper oil for the Niestle filter to provide the dual air flow of the '479 patent in suit. This is particularly true, we suggest, in view of the fact that such mode of operation is taught by the prior art patents to Henshall, Orem, and Merryweather, as admitted by plaintiff [PX-32, R. 986].

A sample filter, DX-LL, conforming to the Niestle patent [R. 507-508], was made and was tested by Mr. Rowley with ordinary conventional filter oil. The test results are graphically presented in the chart, DX-MM, which showed results comparable with the Farr '479 filter here in suit (see Plate I, *infra*) and indicated that the Niestle device would be a good air filter [R. 513-515]. The physical exhibit, DX-LL, plainly shows a heavy deposition of dust on the inlet portions of the passages and almost none on the outlet portions of the passages, as the Court can readily see by examination of the exhibit, and plainly establishes "progressive loading" for the Niestle filter. Also, Mr. Brown made and tested a similar

sample of the Niestle filter (DX-YY) made of ordinary 14-mesh fly screen and with conventional filter oil, and the results of this test are also graphically shown in Plate I at the end of this brief, again showing filter performance characteristics directly comparable with that of the Farr '479 filter.

Furthermore, the District Court overlooked the fact that the Niestle patent plainly teaches that its filter may be dipped before use in either *oil* or *water* [R. 1070, line 11; 1072, line 2]. If dipped in *water* and then exposed to the very high air velocity of *1200 cubic feet per minute* (the rated velocity for the Farr '479 filter), can there be any doubt that the air would blow the water out of the mesh and would then go partly through the mesh and partly along the passages, exactly as in the Farr '479 filter in suit? We suggest that if so used *as clearly taught* by the Niestle patent, the Niestle filter would produce exactly the same results as that of the filter of the '479 patent in suit.

We therefore submit that all of the claims of the '479 patent in suit are directly anticipated by and invalid over the Niestle (French) patent, but that in any event no invention would be involved in merely selecting an appropriate-sized mesh screen and a proper consistency of oil to make the Niestle filter operate in substantially the same way as that of the '479 patent in suit to produce substantially the same result.

Point 5. All of the Claims of the '479 Patent in Suit Are Invalid for Failing to Comply With 35 United States Code, Section 33, in That the Only Possible Feature of Novelty Thereof Is Functionally Defined Merely in Terms of Result.

Every element (or their equivalent) of each of the claims in suit is found in the prior art patents to Henshall [R. 993], Orem [R. 1014], and Row (British) [R. 1051], with the exception of the functional phrase: "said members being constructed and arranged so as to effect a multiple subdivision of the panel in both dimensions perpendicular to the general direction of the flow of the medium to be filtered, thereby forming passages extending through said filter the walls of which passages are composed of such mesh members" (*e. g.,* claim 4 in suit).

The Henshall patent [R. 993] shows the use of perforated plates instead of wire fly screen, but the uncontroverted evidence is that if made of fly screen it would operate substantially the same and the only advantage of using screen would be that the screen would be somewhat cheaper [R. 377-378]. Wire screen and perforated plates are therefore full equivalents. The Henshall patent, therefore, has every element of the claims in suit except the functional "constructed and arranged" clause quoted above.

Mr. Duncan attempted to distinguish the Orem patent from the '479 construction in only two respects: (a) a lack of passage*s* (plural), although he admitted it had one such passage and operated in the same way as to "progressive loading" as the '479 patent in suit [PX-

32, R. 986]; and [R. 751-752]; and (b) it lacked the "constructed and arranged" clause quoted above. We suggest that there is no inventive difference between *one* such passage and a plurality, since they operate the same in principle, and that the only possible novelty in '479 over Orem is in the "constructed and arranged" clause.

The Row (British) patent [R. 1051] also shows every element of the '479 claims except the "constructed and arranged" clause. Plaintiff's expert Duncan admitted that it operates the same as the '480 device in the removal of dust from the air [R. 762-764], and we have shown above (p. 45) that this is by the impingement principle, the same as that of the '479 patent in suit and that there would be progressive loading. All of the other structural elements of the '479 claims, with the exception of the "constructed and arranged" clause are admitted by the plaintiff to be present in Row [PX-32, R. 986].

Since the only possible novelty of the '479 claims is stated in functional language merely setting forth the result to be attained, all of such claims are invalid as failing to comply with 35 United States Code, Section 33. (*See: General Electric Co. v. Wabash Appliance Corp.,* 304 U. S. 364; *United Carbon Co. v. Binney & Smith Co.,* 317 U. S. 228.)

Directly in point is the recent case of *Parker Appliance Co. v. Irvin W. Masters, Inc.,* 94 Fed Supp. 72 (D. C. Cal. 1950), fully affirmed by this Court at 193 F. 2d 180 (1951). In that case, the claims in suit contained the language "so shaped," followed by a statement of results (just as the '479 claims here in suit state "constructed and arranged" followed by a statement of re-

sults). The claims were held invalid as failing to comply with 35 United States Code, Section 33, and this Court affirmed the judgment for the same reasons. Messrs. Lyon & Lyon were similarly for the patent in suit in that case. We suggest that the decision in the *Parker* case, *supra,* is determinative of the issue here, and that under its authority the '479 claims should be similarly held invalid.

Point 6. Defendants' P-5 Filter Does Not Infringe the '479 Patent in Suit Because: (a) the Patentee Farr Abandoned the P-5 Type of Construction; and (b), by File-wrapper Estoppel, Is Estopped From Construing the Claims in Suit as Infringed by Such P-5 Filter.

(a) Abandonment.

The original and abandoned Farr application, Serial No. 285,904 [PX 1B, R. 941-952], disclosed, in Figs. 1 to 3, thereof, Farr's originally "preferred" form of air filter, in which there were *no flat screens,* all of the screens being crimped to provide diagonal corrugations. In such form, the screens were placed so that the corrugations of adjoining screens were *oppositely disposed,* as plainly shown in Fig. 3 of the drawing. This was admitted by plaintiff in the Court below [R. .....]. In this originally "preferred" Farr form, adjacent screens were in direct engagement where the crests of the oppositely directed corrugations crossed. Such a construction was specifically claimed by claim 6 of such abandoned application, as follows:

> "(6) In a filter, a series of laminated, intersticed metal strips deformed to have convolutions which extend there across at an angle of less than 90 de-

grees with respect to the front edge thereof, said strips being laid with said convolutions in *diagonally opposite directions whereby the crests of each convolution in a single strip is brought into contact with the crests of each convolution of the next adjacent strip* to form unrestricted diagonally extending passage-ways therethrough, whereby the direction of flow of a current of air passing through said filter is changed and matter borne upon said current of air is flung by centrifugal force into the interstices of said filter, and a coating of adhesive material on the walls of said interstices to entrap and hold said matter."

Plaintiff admits that Fig. 3 of the drawing of the abandoned Farr application is identical with the Air-Maze "P-5 Obsolete," which is not here charged to infringe any claim of the '479 patent in suit. It is also identical with the defendants' accused P-5 in that: (a) there are no flat screens; (b) the corrugations of adjoining screen members are disposed in opposite directions; and (c) adjacent crimped screen members are in actual engagement where the crests of the corrugations cross. Claim 6, quoted above, is very specific to such features of Figs. 1 to 3, and reads directly upon defendants' accused P-5 filter.

Plaintiff further admitted below that, although the abandoned Farr application disclosed a number of forms of the alleged Farr invention, the only form carried over into the application for the '479 patent in suit was that shown in Figs. 9 and 10 of the abandoned application [R. .....]. This is plainly the fact, because the '479 patent in suit discloses no form without flat screens, and no form in which the corrugations of adjoining

crimped members are disposed in opposite directions, and no form in which adjoining crimped members actually engage at the crests of the corrugations.

Claim 6, quoted above, was rejected by the Patent Office for lack of invention over the prior art [R. 953], and the applicant Farr abandoned such claim and the features specifically set forth therein by permitting the original application Serial No. 285,904 to become abandoned [R. 955].

We therefore submit that such facts establish an express abandonment by the applicant Farr of the P-5 form shown in Figs. 1 to 3 of his original application but not carried over into his application for the '479 patent in suit.

The law is plain that where, in response to rejection by the Patent Office, an applicant expressly withdraws from the application variant and alternative structures, it will be treated as an express abandonment, and the claims ultimately issuing to the applicant cannot be construed to cover such feature voluntarily withdrawn by the applicant: (*See*: *Ruud Mfg. Co. v. Long-Landreth-Schneider Co.,* 250 Fed. 860 (C. C. A. 2d 1918); *Lincoln v. Waterbury Button Co.,* 291 Fed. 594 (D. C. Conn. 1923); *Na-Mac Products Corp. v. Federal Tool Corp.,* 118 F. 2d 167 (C. C. A. 7th 1941).)

It is submitted that Farr expressly abandoned his original disclosure, and claim 6, to the specific features by which the accused P-5 filter distinguishes from the disclosure of the '479 patent in suit, and that the claims of the '479 patent cannot properly be construed to cover such features or defendants' P-5 filter.

(b) File-wrapper Estoppel.

We further submit that, under the well-established doctrine of "file-wrapper estoppel," plaintiff is estopped from contending for a construction of claims 4, 5, 7, or 8 of the '479 patent here in suit broad enough to recapture the specific features originally claimed by claim 6 of the abandoned application Serial No. 285,904 but forfeited by allowing such claim to become abandoned.

It is contended by plaintiff [R. 815-817] that claims 4, 5, 7, and 8 of the '479 patent in suit are all *broader* than abandoned claim 6 of the original abandoned application Serial No. 285,904. Even if so, the rule of file-wrapper estoppel applies to such a situation.

The leading case in point is that of *Morgan Envelope Co. v. Albany Perforated Wrapping Paper Co.,* 152 U. S. 425, 14 S. Ct. 627, 38 L. Ed. 500 (1894), in which the Supreme Court, in applying the file-wrapper estoppel doctrine, said at page 429:

> ". . . But the patentee having once presented his claim in that form, and the Patent Office having rejected it, and he having acquiesced in such rejection, he is, under the repeated decisions of this court, now estopped to claim the benefit of his rejected claim or such a construction of his present claim as would be equivalent thereto. *Leggett v. Avery,* 101 U. S. 256; *Shepard v. Carrigan,* 116 U. S. 593; *Crawford v. Heysinger,* 123 U. S. 589, 606; *Union Metallic Cartridge Co. v. United States Cartridge Co.,* 112 U. S. 624.

> "It is true that these were cases where the original claim was broader than the one allowed, *but the principle is the same if the rejected claim be narrower.* Why the claim of the present patent was allowed after the rejection of the narrower claim does not appear. The objections made to the claim as originally presented seem to be equally applicable to this."

This doctrine of the *Morgan Envelope* case, *supra,* was quoted and applied in the more recent case of *Schriber-Schroth Co. v. Cleveland Trust Co.,* 311 U. S. 211, 60 S. Ct. 710, 85 L. Ed. 132, in which the Court at page 137 (L. Ed.) said:

> "It is a rule of patent construction consistently observed that a claim in a patent as allowed must be read and interpreted with reference to claims that have been cancelled or rejected and the claims allowed cannot by construction be read to cover what was thus eliminated from the patent. . . . The patentee may not, by resort to the doctrine of equivalents, give to an allowed claim a scope which it might have had without the amendments, the cancellation of which amounts to a disclaimer . . . The injurious consequences to the public and to inventors and patent applicants if patentees were thus permitted to revive cancelled or rejected claims and restore them to their patents are manifest. . . .
>
> "True, the rule is most frequently invoked when the original and cancelled claim is broader than that allowed, but the rule and the reason for it are the same if the cancelled or rejected claim be narrower. . . ."

The doctrine was only recently applied by this Court in the case of *Gasair Corp. v. Ransome Co.,* 140 F. 2d 818, in which, at page 819, it said:

> "This rejected claim described a device of the same nature but having only a single aspirator connected by a single pipe to a housing with a single outlet controlled by a valve which was actuated by changes in pressure in the main. That *this rejected claim is in a sense narrower than those allowed* does not impair its use as a means of discovering the limits of the claimed invention. Morgan Envelope Co. v. Albany Perforated Wrapping Paper Co., 152 U. S. 425, 429, 14 S. Ct. 627, 38 L. Ed. 500."

A patentee cannot construe the claims of his issued patent to cover specific features which were the subject of earlier claims which were rejected and then cancelled in response to the rejection. (*See*: *A. Schrader's Son v. James Martin Corp.,* 294 Fed. 620, 623 (C. C. A. 2d 1923); *Monitor Stove Co. v. Williamson Heater Co.,* 299 Fed. 1 (C. C. A. 6th 1924); *Aeration Processes, Inc. v. Lange,* ..... F. 2d ....., 93 P. Q. 332 (C. C. A. 8th 1952).)

It is therefore submitted that plaintiff is estopped from construing the claims here in suit to cover features originally specifically claimed by abandoned claim 6 of the original abandoned Farr application, which features were not carried over into the drawing, specification, or claims of the '479 patent in suit, and which features are the distinguishing structural differences between defendants' accused P-5 filter and the filter of the '479 patent in suit.

Point 7. Defendants' P-5 Filter Does Not Infringe Because It Differs Substantially in Construction From That of the '479 Patent in Suit.

The defendants' accused P-5 filter differs substantially in construction from the filter disclosed in the '479 patent in suit. Such specific structural differences are shown by the following comparisons:

A.	The Farr '479 filter is composed of alternate layers of *flat* and *crimped* screen.	The P-5 has *no flat* screen; it is entirely composed of crimped screen.
B.	In the Farr '479 filter, the corrugations of *all* of the crimped screens are *parallel.*	In the P-5, alternate crimped screens have *oppositely angled* corrugations.
C.	The Farr '479 filter provides a number of individual passages or tunnels, each running from front to back of the filter.	In the P-5, there are *no* such individual passages or tunnels.
D.	In the Farr '479 filter, the passages are of *uniform triangular cross section* and are *entirely surrounded* by the mesh of the screens.	In the P-5, every space between adjoining screens is *non-uniform in cross section* and is in *open communication* laterally with many other spaces.
E.	In the '479 filter, the separate passages extend entirely through the panel and *subdivide it throughout its entire depth in both dimensions perpendicular to the air flow.*	In the P-5, there are no passages which subdivide the *entire depth* of the panel.

F.	In the '479 filter there is a *change of direction* in the passages.	Since there are no distinct passages in the P-5, there is no such *change* of direction.

The '479 patent is in a crowded art, and any structural variation from the art that can be asserted for it is minor in character. At best, it is for a mere improvement, and should be construed to be limited to the "*precise devices* described and claimed" therein, as this Court held in *Eaid v. Twohy Bros. Co.,* 230 Fed. 444, 447 (C. C. A. 9th, 1916). To the same effect, *see: Broadway Towel Supply Co. v. Brown-Meyer Co.,* 245 Fed. 659, 661 (C. C. A. 9th, 1917); *Pacific States Electric Co. v. Wright,* 277 Fed. 756, 758 (C. C. A. 9th, 1922); *Overlin v. Dallas Machine & Loco. Wks.,* 297 Fed. 7, 11 (C. C. A. 9th, 1924); *International Harvester v. Killifer Mfg. Co.,* 67 F. 2d 54, 62 (C. C. A. 9th, 1933); *Magnavox Co. v. Hart & Reno,* 73 F. 2d 433, 435 (C. C. A. 9th, 1934).

Since the '479 patent is merely for an asserted new combination of admittedly old elements (see p. 27), *supra*), it should be strictly construed to cover only the specific construction disclosed therein. *See: Stubnitz-Green Spring Corp. v. Fort Pitt Bedding Co.,* 110 F. 2d 192 (C. C. A. 6th, 1940); *H. H. Robertson Co. v. Klauer Mfg. Co.,* 98 F. 2d 150 (C. C. A. 8th, 1938); *Remington Rand, Inc. v. Meilink Steel Safe Co.,* 140 F. 2d 519 (C. C. A. 6th, 1944). *And see: Office Specialty Mfg. Co v. Fenton Metallic Mfg. Co.,* 174 U. S. 492 at 498 (1898).

Such a strict interpretation, limiting the scope of the claims of the '479 patent to that which is specifically disclosed should particularly be applied here where all of

the claims in suit are vague and indefinite at the only possible point of novelty (*see* p. 55, *supra*). *See: Shull Perforating Co., Inc. v. Cavins,* 94 F. 2d 357 (C. C. A. 9th, 1938); *Ford Motor Co. v. Gordon Form Lathe Co.,* 87 F. 2d 390 (C. C. A. 6th, 1937).

Furthermore, where only one form of the alleged invention is disclosed and described in the specification, the claims, read in the light thereof, should be limited to such specific form. *See: McRoskey v. Braun Mattress Co.,* 107 F. 2d 143 (C. C. A. 9th, 1939).

Under such circumstances, we do not think that this Court will accord to the claims of the '479 patent a broad interpretation which would cover all possible ways, heretofore and not yet conceived, of forming wire screen members in a filter so that they will "effect a multiple subdivision of the panel in both dimensions perpendicular to the general direction of flow of the medium to be filtered" (claim 4).

Under the law, the '479 patent claims should be read in the light of the specification and drawing. The '479 patent claims should therefore be limited by interpretation to cover only a filter as shown therein and having (a) alternate *flat and crimped* screens; (b) the corrugations of the crimped screen being *parallel;* and (c) the crimped screens forming *distinct passages* of *uniform triangular cross section* extending *entirely through* the filter element and *subdividing* the panel in both dimensions throughout its depth. Since the defendants' accused P-5 filter has none of such features, it does not infringe.

A comparison of the defendants' accused P-5 filter, and the filters of the Niestle (French) prior art patent [R. 1062] and the Farr '479 patent in suit shows, we sug-

gest, that the Niestle filter is more like the Farr '479 filter structurally than the accused P-5 is like the '479 filter. The Niestle filter has well-defined passages extending through it which subdivide it throughout its depth in two dimensions perpendicular to the air flow, just as is claimed of the '479 filter in suit. In the Niestle filter, the side walls of the mesh passages have relatively large openings along them which provide intercommunication laterally between passages, just as in the accused P-5 filter all of the spaces between the horizontal screens communicate laterally. If the '479 claims are construed broadly enough to cover the accused P-5, we submit that they read directly upon the Niestle prior art filter; on the other hand, if the '479 claims are construed narrowly enough to avoid anticipation by the Niestle patent (*e. g.*, limited to a filter having enclosed passages bounded on all sides by wire mesh), they obviously cannot cover the P-5, and there is no infringement.

The issuance of the Schaaf patent [R. 1080] to defendant Air-Maze, specifically covering its accused P-5 filter, and after consideration by the Patent Office of the Farr '479 patent, plainly indicates that the Patent Office considered them different types of devices. It raises a presumption that the P-5 does not infringe the Farr '479 patent in suit. *See: Ransome v. Hyatt,* 69 Fed. 148 (C. C. A. 9th, 1895); *Dunkley Co. v. Central Calif. Canneries,* 7 F. 2d 972, 977 (C. C. A. 9th, 1925); *Majestic Electric Appliance Co. v. Hicks,* 24 F. 2d 165 (C. C. A. 9th, 1928).

VI.
Conclusion.

The '479 patent in suit lies in the crowded air filter art. It is, at best, a combination of old elements selected from such art and which, we say, each individually performs the same function in the same way to produce the same result as it did in the art. Under the law, such patents must be judged in the light of the "inherent unlikelihood" of the presence of invention, and to them must be applied a severe test of invention. The '479 patent in suit, we suggest, fails to meet *any* test of invention, much less the high standard required in such cases.

The filter of the '479 patent in suit is identical with the Detroit Air Filter, except that it is made of wire fly screen instead of cardboard. The '479 filter is identical with the '480 prior use filter and air conditioner, except that it has a bend or change in direction in its passages. It is identical with the filter of the St. Cyr patent, even to the change in direction of its passages, except that possibly such change of direction is more abrupt in the '479 device. It is substantially identical with the filter of the Niestle (French) patent. Any of such possible differences, however, are shown or suggested in the other prior art filters of record, where they operate in the same way to produce the same result as in the '479 filter. We suggest that no invention was involved in the '479 patent in making such slight modifications of the prior art filters, particularly when the advantage of each of such modifications was forecast in the art.

Each of the claims of the '479 patent in suit is conveniently vague, indefinite, and functional at the only possible point of novelty and, under the law, should either be limited by interpretation to the precise structure shown and described in the '479 patent or held invalid as failing to meet the requirements of 35 U. S. C., Section 33. That the '479 patent in suit is merely for an assemblage of old elements is a further reason, under the law, for according its claims a narrow interpretation confined to the precise filter disclosed in the patent.

Defendants' accused P-5 filter differs structurally in many respects from the filter disclosed in the '479 patent. The P-5 filter has no flat screens, in it the corrugations of the crimped screens are not parallel, it provides no well-defined passages through the filter panel, all of which are found in the '479 filter. In the P-5 filter, all of the screens are crimped to provide angled corrugations, the corrugations of adjacent screens being oppositely angled and in contact with each other, all of which features were initially specifically claimed but subsequently abandoned by the applicant Farr as shown by the file-wrapper of the '479 patent and its parent abandoned application. If so confined by interpretation to the specific features shown in the '479 patent, the defendants' P-5 does not infringe as it does not include many of them, but in any event, the plaintiff is estopped by file-wrapper estoppel from recapturing by interpretation the very distinguishing features of the P-5 filter which were earlier specifically shown and claimed by the applicant Farr but later abandoned.

Only claims 4, 5, 7 and 8 of the '479 patent are involved here. If such claims are invalidated by this Court, plaintiff still will retain in the '479 patent the claims not here in suit, which cover the specific construction of the Farr filter. Such unlitigated claims will adequately protect the plaintiff against the copying of its filter by others, and yet industry will not have to pay tribute to the nebulous claims here involved.

Defendants submit that claims 4, 5, 7 and 8 of the '479 patent in suit are plainly invalid, but if valid are plainly not infringed by defendants, and that the judgment of the District Court should be reversed.

Respectfully submitted,

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PLATE I

EFFICIENCY & PRESSURE DROP
UP TO 600 GRAM DUST LOAD OR END OF TEST,
WHICHEVER EARLIEST

Filter Tested	Record Reference	Starting Efficiency	Final Efficiency	Increase or Decrease in Efficiency	Starting Pressure Drop	Final Pressure Drop	Increase or Decrease in Pressure Drop
Farr '479	[PX-11, 13; Duncan's test at 519 F.P.M.]	78%	75%	—3%	0.10″	0.11″	+10%
Farr '479	[DX-JJ; Rowley's test at 300 F.P.M.]	87%	77%	—10%	0.05″	0.13″	+160%
Farr '479	[DX-VV; District Court's test]	76%	78%	+2%	0.05″	0.29″	+190%
Air-Maze P-5 Obsolete	[DX-II; Rowley test]	84.5%	76.5%	—8%	0.05″	0.075″	+50%
Air-Maze Type B.	[PX-11; Duncan test]	75%	74%	—1%	0.13″	0.17″	+39%
Air-Maze P-5	[PX-13; Duncan's test at 519 F.P.M.]	76%	72%	—4%	0.10″	0.13″	+30%
Air-Maze P-5	[PX-30; Rowley's test at 300 F.P.M.]	77%	77%	0%	0.05″	0.14″	+180%
Detroit Air Filter	[PX-1A, pg. 36]	88%	86%	—2%	0.06″	0.08″	+33%
Detroit Air Filter	[Duncan test, R. 196]	65%	73%	+8%	0.23″	0.28″	+21%
Detroit Air Filter Made of Fly Screen	[DX-XX; Brown test]	83%	88%	+5%	0.095″	0.14″	+47%
Niestle Prior Art	[DX-ZZ; Brown test]	79.5%	70%	—12%	0.075″	0.14″	+86%